Hitachi Power Tools

TECHNICAL DATA AND SERVICE MANUAL

LIST No. H870
June 2010

PRODUCT NAME

Hitachi 3.6 V Cordless Driver Drill
Model DB 3DL2

D

MARKETING OBJECTIVE

The Model DB 3DL2 is a cordless driver drill equipped with a 3.6 V lithium-ion battery. The Model DB 3DL2 has the following main features:

(1) Built-in verdischarge protection circuit and overcurrent protection circuit
(2) Equipped with newly developed lithium-ion battery (3.6 V, 1.5 Ah) that can be fully charged in 30 minutes.
(3) Flexibly changeable handle between L shape and straight shape
(4) Lightweight and compact
(5) White LED light
(6) Manual tightening mechanism. Screws are easily tightened manually thanks to the comfortable handle shape and soft grip.

We aim to expand our market share with the new Model DB 3DL2.

APPLICATIONS

- Constructing electric facilities, assembling machines and servicing
- Tightening and loosening wood screws and machine screws
- Drilling into plastic and mild steel

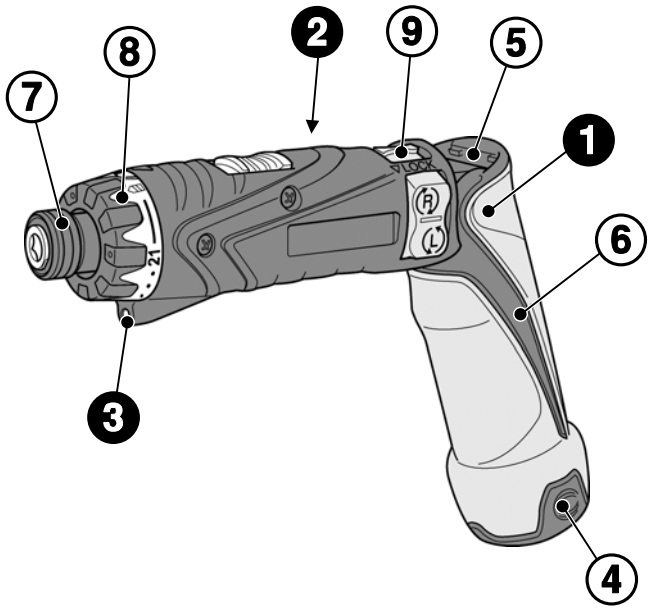
SELLING POINTS

[NEW FEATURES]

❶ Built-in verdischarge protection circuit and overcurrent protection circuit
❷ Lightweight and compact
❸ White LED light

[SAME FEATURES AS THE CONVENTIONAL MODELS]

④ Equipped with lithium-ion battery
⑤ Flexibly changeable handle
⑥ Soft-grip handle
⑦ Manual tightening mechanism
⑧ 21-stage clutch
⑨ Lock button
⑩ Blow-molded case



SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

HITACHI

Hitachi Koki Co., Ltd.
International Sales Division

REMARK:

- For more information about HANDLING INSTRUCTIONS, visit our website at:

  http://www.hitachi-koki.com/manual_view_export/

- Throughout this TECHNICAL DATA AND SERVICE MANUAL, a symbol(s) is(are) used in the place of company name(s) and model name(s) of our competitor(s). The symbol(s) utilized here is(are) as follows:

Symbols Utilized	Competitors	
	Company Name	Model Name
C	DeWalt	DC600KA

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Assembly Diagram for DB 3DL2

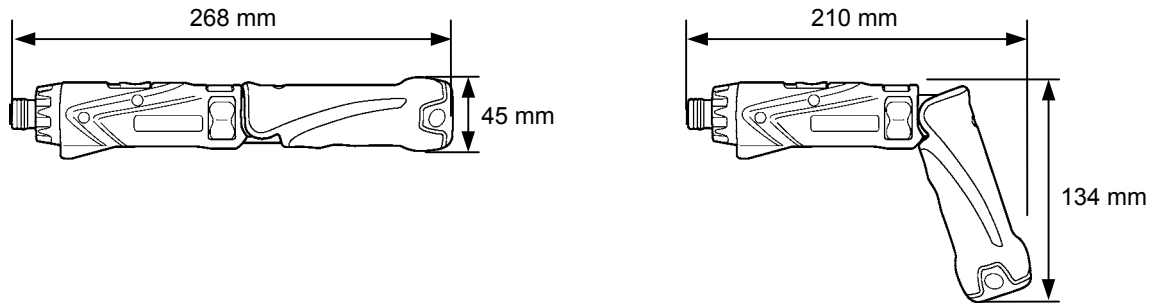
SELLING POINTS

❶ Built-in verdischarge protection circuit and overcurrent protection circuit

The built-in verdischarge protection circuit and overcurrent protection circuit prevent any loss in battery service life due to overdischarge (excessive use) and overcurrent (excessive load).

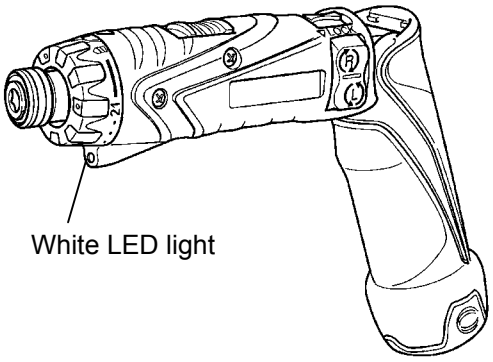
❷ Lightweight and compact

The Model DB 3DL2 is compact and lightweight. It is easy to handle and convenient for operation in narrow spaces.



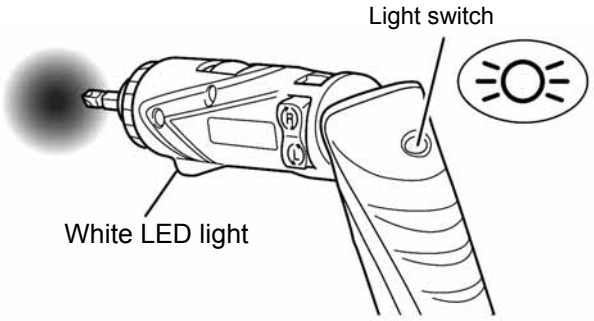
❸ White LED light

The Model DB 3DL2 is equipped with a white LED light at the tip. This light can be used regardless of the handle shape (L shape or straight shape).



• The light lights when the light switch is pushed.

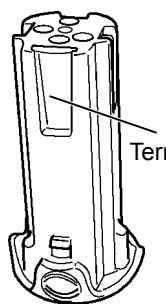
see HANDLING INSTRUCTIONS



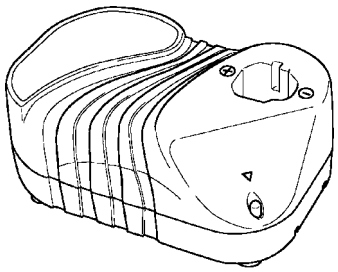
❹ Equipped with lithium-ion battery

The Type EBM 315 lithium-ion battery (3.6 V, 1.5 Ah) can be fully charged by the Model UC 3SFL Battery Charger in just 30 minutes. The minus terminal has a cover to prevent improper short circuits. There is no need to put on a battery cover as required for a conventional battery.

• lithium-ion battery Type EBM 315
There is no need to put a battery cover required for a conventional battery.

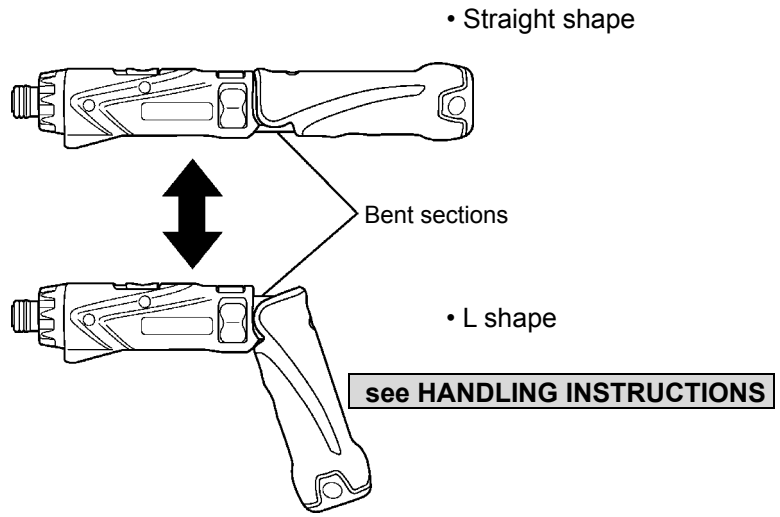


• Battery Charger Model UC 3SFL



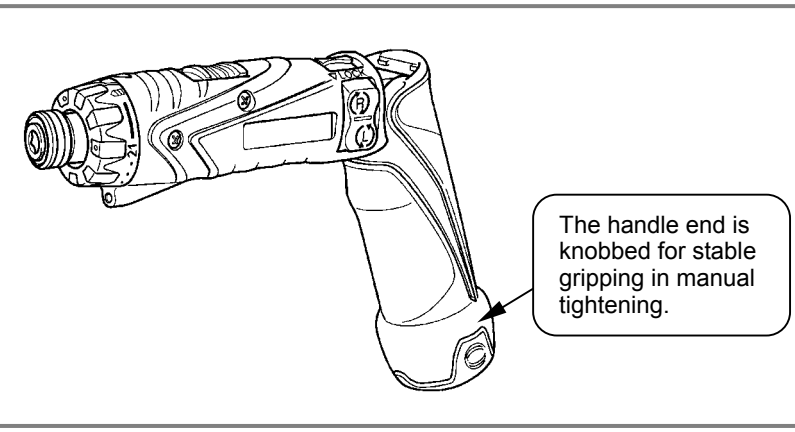
⑤ Flexibly changeable handle

The handle is flexibly changeable between the L shape and straight shape for various applications.



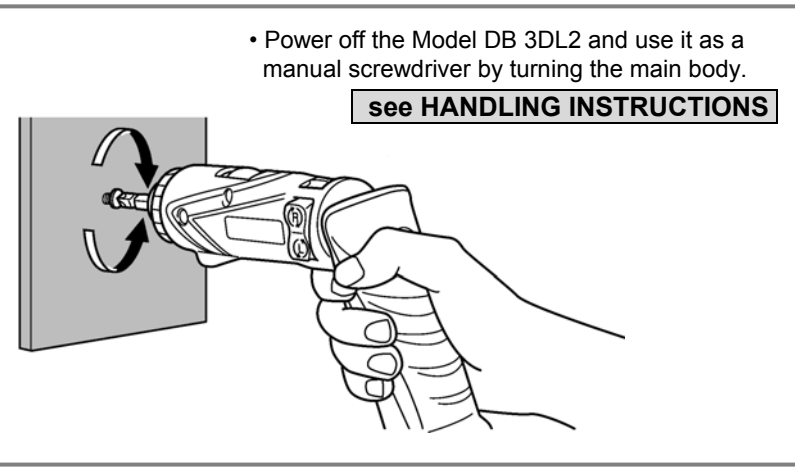
⑥ Soft-grip handle

The handle is soft and slip-resistant. The end of the handle is also knobbed for a stable grip in manual tightening.



⑦ Manual tightening mechanism

The Model DB 3DL2 can be used as a manual screwdriver. If a screw cannot be completely tightened with the clutch setting, power off the Model DB 3DL2 and use it as a manual screwdriver by simply turning its main body (maximum manual tightening torque: 5N·m {51 kgf·cm}).

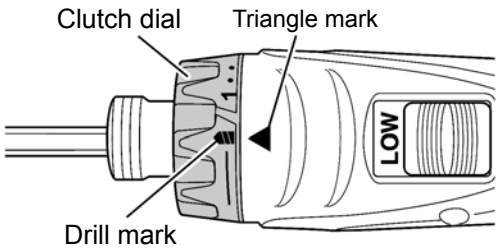


⑧ 21-stage clutch

The torque can be finely adjusted by the 21-stage clutch.

• The tightening torque of this unit can be adjusted according to the clutch dial position, at which the clutch dial is set.

see HANDLING INSTRUCTIONS

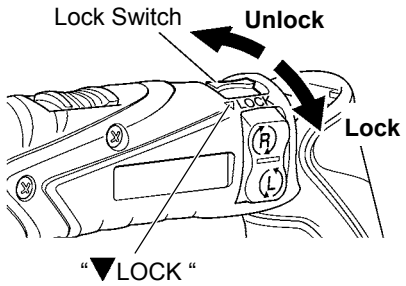


⑨ Lock button

The lock button is provided to prevent inadvertent motor startup, even if the switch is mistakenly turned on.

• To activate the main switch lock, move the lock switch to the " ▼LOCK " position.

see HANDLING INSTRUCTIONS



⑩ Blow-molded case

The compact blow-molded case is convenient for carrying the tool.

SPECIFICATIONS

1. Specifications

Item \ Model		DB 3DL2
Capacity	Screw driving	Machine screw------M 5 (1/5") Wood screw ---------3.8 mm dia. x 38 mm (#8 x 1-1/2")
	Drilling	Metal ----------Mild steel ø 5 mm (13/64") [Thickness 1.0 mm (3/64")]
Tool retainer		6.35 mm (1/4") bit holder
Rotation speed		Low: 200 min^{-1} High: 600 min^{-1}
Torque		Slip torque ------ 0.3 to 2.9 N·m (3 to 30 kgf·cm, 3 to 26 in-lbs.) [21 stages] Max. torque----- 5 N·m (51 kgf·cm, 44 in-lbs.)
Type of motor		DC magnet motor
Type of switch		Tumbler switch with forward/reverse changeover pushing button
Enclosure		Body----------Glassfiber-reinforced nylon resin (black) and thermoplastic elastomer (green) Battery ----------Polycarbonate resin (black) Charger----------ABS resin (black)
Battery (Type EBM 315)	Type of battery	Sealed cylindrical lithium-ion storage battery
	Nominal voltage	DC 3.6 V
	Nominal life	Charging/discharging: Approx. 500 times
	Nominal capacity	1.5 Ah
	Charging time	30 minutes (with standard accessory charger at ambient temperature of 20°C)
	Charging temperature	10°C to 40°C (50°F to 104°F)
Charger (Model UC 3SFL)		• Overcharge prevention circuit: A thermostat monitors the battery surface temperature and when a rise in temperature is detected after the end of charging, the unit is turned off automatically to prevent the battery from overcharge. • Input capacity: 21 W • Indication method: Pilot lamp indicates the charging state. • Function: On ---------- During charging Off ---------- Charging completed
Weight	Net	Main body (including Type EBM 315 battery)---------- 0.4 kg (0.9 lbs.) Charger unit (including cord)---------- 0.3 kg (0.7 lbs.)
	Gross	DB 3DL2 (2LCSK) (including Type EBM 315 battery) --- 1.8 kg (4.0 lbs.)
Standard accessories		• Charger (UC 3SFL) ----------1 • Battery (Type EBM 315) ----------2 • Phillips plus driver bit (No. 2) ----------1 • Case----------1

COMPARISON WITH SIMILAR PRODUCTS

1. Comparison of Specifications

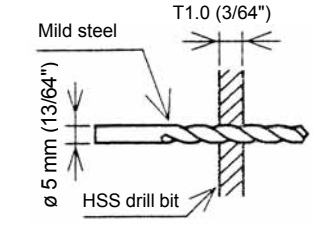
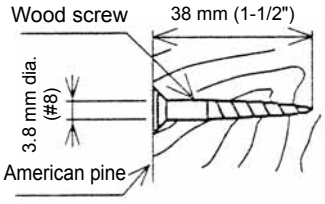
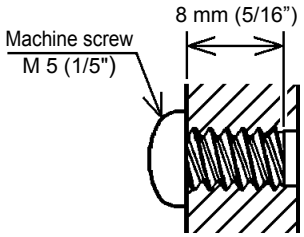
(Superior specifications:)

Item \ Maker / Model			HITACHI DB 3DL2	C
Max. capacity	Drilling	Mild steel	ø 5 mm (13/64")	Not indicated
	Screw driving	Wood screw	3.8 mm dia. x 38 mm (#8 x 1-1/2")	Not indicated
		Machine screw	M 5 (1/5")	Not indicated
Rotation speed		Low	200 min^{-1}	200 min^{-1}
		High	600 min^{-1}	600 min^{-1}
Max. torque			5 N·m (51 kgf·cm) (44 in-lbs.)	5 N·m (51 kgf·cm) (44 in-lbs.)
Slip torque			21 stages 0.3 to 2.9 N·m 3 to 30 kgf·cm (3 to 26 in-lbs.)	8 stages Not indicated
Spindle lock function			Equipped	Equipped
Tool tip mounting system			Driver chuck	Driver chuck
LED light			Equipped	Equipped
Soft-grip handle			Equipped	Equipped
Battery type			Li-ion	Ni-Cd
Battery	Nominal capacity		1.5 Ah	1.2 Ah
	Nominal voltage		3.6 V	3.6 V
	Charging time*		30 min. (Model UC 3SFL)	60 min.
Dimensions	Straight-shape	Overall length	268 mm (10-9/32")	295 mm (11-39/64")
		Overall height	45 mm (1-49/64")	67 mm (2-41/64")
	L-shape	Overall length	210 mm (8-17/64")	195 mm (7-43/64")
		Overall height	134 mm (5-9/32")	170 mm (6-11/16")
	Width		45 mm (1-49/64")	46 mm (1-13/16")
Weight			0.45 kg (1.0 lbs.)	0.7 kg (1.5 lbs.)

*: Charging time may vary depending on the type of charger used.

2. Comparison of Drilling and Fastening Performance per Charge

(Superior specifications:)

Type of work	Maker	Model	Working capacity	Drilling speed (sec./pc.)
 <High speed>	HITACHI	DB 3DL2	*0: 210	**4.7**
	C		*0: 190	4.8
 <Low speed>	HITACHI	DB 3DL2	*250: 70	**6.5**
	C		*250: 60	6.7
 <High speed>	HITACHI	DB 3DL2	*1000: *1000	0.8
	C		*1000: 760	0.8

[Working Capacity]
Without *: Number of holes or fasteners per charge
With *: Number of machine screws fastened per charge

The above table shows an example of test data obtained using the standard battery for this tool.
As actually measured values listed in the above table may vary depending on sharpness of the drill bit, workpiece hardness (particularly in wood materials), moisture content of wood, charging condition, operator skill, etc. This data should therefore only be used as a comparative guide.

PRECAUTIONS ON SALES PROMOTION

1. Safety Instructions

In the interest of promoting the safest and most efficient use of the Model DB 3DL2 Cordless Driver Drill by all of our customers, it is very important when concluding a sale that the salesperson carefully ensure that the buyer seriously recognizes the importance of the Handling Instructions, and fully understands the meaning of precautions listed on the Caution Plate and Name Plate attached to each tool.

A. Handling instructions

Salespersons must be thoroughly familiar with the Handling Instructions in order to give pertinent advice to the customer. In particular, they must have a thorough understanding of the precautions on using cordless tools that differ from those of ordinary electric power tools.

(1) Before use, ensure that the unit is fully charged.

New units are not fully charged. Even if the units were fully charged at the factory, long periods of inactivity, such as during shipping, cause the storage battery to lose its charge. Customers must be instructed to fully charge the unit prior to use.

(2) When charging storage batteries, only use only the dedicated Model UC 3SFL Charger provided with the tool.

Due to the designed rapid-charging feature (of about 30 minutes), the use of other battery chargers is hazardous.

(3) Connect the charger to an AC power outlet only.

The use of any other power source (e.g., DC outlet, fuel powered generator) will cause the charger to overheat and burn out.

(4) Do not use any voltage-increasing equipment (e.g., transformer) between the power source and the charger.

Using the charger with voltage higher than that indicated on the unit will result in malfunction.

(5) Conduct battery charging at an ambient temperature range of 10°C to 40°C (50°F to 104°F).

Special temperature-sensitive devices are employed in the charger to permit rapid charging. Ensure that customers are instructed to use the charger at the indicated ambient temperature range. At temperature below 10°C (50°F) the thermostat will not function properly, and the storage battery may be overcharged. At temperature above 40°C (104°F), the storage battery cannot be sufficiently charged. The optimum temperature range is 20°C to 25°C (68°F to 77°F).

(6) The battery charger should not be used continuously.

Charging more than three storage batteries in succession at high ambient temperature will raise the temperature of transformer coils and the temperature fuse inserted inside the transformer may inadvertently melt. After charging one battery, please wait about 15 minutes before charging the next battery.

(7) Do not insert foreign objects into the air vents on the charger.

The charger case is equipped with air vents to protect the internal electronic components from overheating. Caution the customer not to allow foreign materials, such as metallic or flammable objects, to be dropped or inserted into the air vents. This could cause electric shock, fire, or other serious hazards.

(8) Do not attempt to disassemble the storage battery or the charger.

Special devices, such as a thermostat, are built into the storage battery and charger to permit rapid charging. Incorrect parts replacement and/or wiring will cause malfunctions which could result in fire or other hazards. Instruct the customer to bring these units to an authorized service center in the event repair or replacement is necessary.

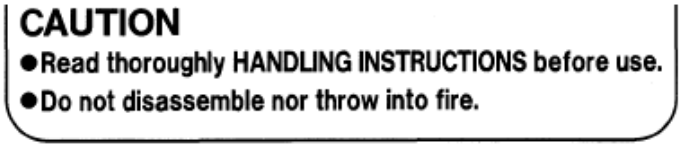
(9) Disposal of the storage battery (Type EBM 315)

Ensure that all customers understand that Type EBM 315 storage battery should be returned to the Hitachi power tool sales outlet or authorized service center when no longer capable of being recharged or repaired. If thrown into a fire, the battery may explode, or if discarded indiscriminately, leakage of the cadmium compound contained in the battery may cause environmental pollution.

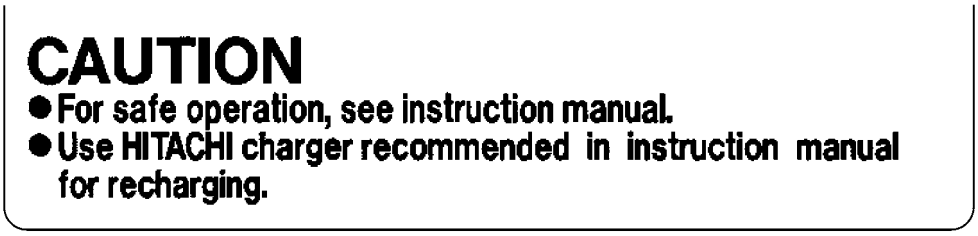
B. Caution plates

The following cautions are listed on the Name Plate attached to each Type EBM 315 storage battery.

[For Europe]



[For the USA and Canada]


CAUTION
●For safe operation, see instruction manual.
●Use HITACHI charger recommended in instruction manual for recharging.

2. Inherent Drawbacks of Cordless Driver Drills Requiring Particular Attention during Sales Promotion

The cordless driver drill offers many advantages; it can be used in places where no power source is available, the absence of a cord allows easy use, etc. However, any cordless tool has certain inherent drawbacks.

Salespersons must be thoroughly familiar with these drawbacks in order to properly advise the customer in the most efficient use of the tool.

A. Suggestions and precautions on efficient use of the tool

(1) Use the cordless driver drill for comparatively light work.

The motor output of battery driven cordless driver drills is rather low compared with conventional electric power tools. Accordingly, they are not suitable for the continuous drilling of many holes in succession, or for drilling into particularly hard material that imposes a heavy load. Salespersons should recommend conventional electric power tools for such heavy work.

(2) Work requiring particularly strong torque should be conducted at low speed.

Instruct the customer to conduct work that requires particularly strong torque at low speed, as locking of the motor may occur at high speed.

(3) Do not insert a foreign object into the body.

A foreign object inserted through a hole may cause failure. Please instruct customers to never insert a foreign object into the main body of the tool.

(4) Avoid "Locking" of the motor.

Locking of the motor will generate an overload current that could result in motor burnout and/or rapid battery deterioration. Salespersons should advise the customer to immediately release the switch and stop operation if the motor becomes locked. (A jammed drill bit can be disengaged from the workpiece material by setting the switch to reverse rotation, or by manually turning the main body of the tool.)

(5) Variation in amount of work possible per charge

Although the nominal chargeable capacity of the storage battery used with the Model DB 3DL2 is 1.5 Ah, the actual capacity may vary within 10% of that value depending on ambient temperature during use and charging, and the number of times the batteries have been recharged. It should be noted that other factors that may affect the amount of work possible per charge are the working conditions (e.g., ambient temperature, type and moisture content of the workpiece, sharpness of the drill bit) and the operational skill of the user.

(6) Precautions on the use of HSS drill bits

For example, although the Model DB 3DL2 is designed for drilling capacities of 5 mm (13/64") in mild steel, this capability is not as efficient as conventional electric power tools. In particular, the drill tends to become locked when the drill bit penetrates a material. For this reason, the customer should be cautioned to reduce the thrust on the main body of the drill when drilling completely through a material to avoid locking the tool. Repeated locking of the drill causes excessive current to flow from the batteries, thereby not only reducing the amount of work possible per charge, but also possibly resulting in motor burnout.

B. Suggestions and precautions on efficient use of the charger and storage battery

If the Type EBM 315 storage battery is exposed to direct sunlight for an extended period or the tool has just been operated for a long time, charging may not be possible if the battery temperature is above 40°C (104°F). In such case, the customer should be advised to place the battery in a shaded area with good airflow, and allow sufficient cooling before recharging. This phenomenon is common to all existing batteries and chargers that employ temperature-sensitive overcharge protection devices. The cooling time necessary before recharging can vary from a few minutes to about 30 minutes, depending on the load, duration of use, and ambient temperature.

REPAIR GUIDE

Be sure to remove the storage batteries from the main body before servicing. Inadvertent triggering of the switch with the storage battery connected imposes the danger of the motor accidently turning.

1. Precautions on Disassembly and Reassembly

[Bold] numbers in the descriptions below correspond to item numbers in the Parts List and exploded assembly diagram for the Model DB 3DL2.

Disassembly

1. Removal of Handle (A).(B) Set

(1) Removal of the Clip **[49]** (2 pcs.).
Insert a flat-blade screwdriver in the indention of the Clip **[49]** and remove the Clip **[49]**.

(2) Remove the Tapping Screw (W/Flange) D4 x 20 (Black) **[43]**.

(3) Grip the battery insertion part and open Handle (A).(B) Set **[50]**. Since there are latches in Handle (A).(B) Set **[50]**, it is hard to open. Open Handle (A).(B) Set **[50]** from the LED button side. Then remove the Button **[44]**. Do not remove the Steel Ball D3 **[36]** from Handle (A).(B) Set **[50]**.

• Removal of the Clip

2. Removal of Housing (A).(B) Set

Remove the two Click Plate **[37]**, Pan Hd. Tapping Screw D3 x 8 **[34]** and Handle Cover **[39]**. Since there are latches in Housing (A).(B) Set **[33]**, it is hard to open. Open Housing (A).(B) Set **[33]** from the Shift Knob **[38]** side. After opening Housing (A).(B) Set **[33]**, all internal parts (of the drive unit) can be removed. Pull out the drive unit (consisting of the gear unit, Motor DC 3.6V **[31]** and power supply unit).

3. Disassembly of the drive unit (internal parts)

(1) Remove the Shift Arm **[13]** from the Gear Box Ass'y **[1]**.

(2) Pull up the Motor DC 3.6V **[31]** and remove it from the Gear Box Ass'y **[1]**. Remove the two Machine Screw (W/Sp. Washer) M2.6 x 6 **[32]**, then remove the Motor Spacer **[30]** from the Motor DC 3.6V **[31]**.

(3) Pull up the Switch (W/Lock) **[41]** and remove it from the Motor DC 3.6V **[31]**. If it is difficult to remove, use a flat-blade screwdriver.

4. Disassembly of the gear unit

(1) Removal of the gear
Take out Washer (A) **[29]**, First Ring Gear **[28]**, Planet Gear (A) Set (3 pcs.) **[27]**, Pinion (B) **[26]**, Slide Ring Gear **[25]**, Planet Gear (B) Set (3 pcs.) **[24]** and Pinion (C) **[23]** one by one. Then remove the two Needle **[18]** from the Gear Case **[12]**. Take out Washer (B) **[22]**, Ring Gear **[21]**, Planet Gear (C) Set (3 pcs.) **[20]**, Carrier **[19]**, Needle Roller Set (6 pcs.) **[17]**, Lock Ring **[16]**, three Steel Ball D3 **[15]** and Pin Set (3 pcs.) **[14]** one by one.

(2) Removal of Guide Sleeve (A) **[6]**

Remove the Retaining Ring **[3]**, Washer (D) **[4]**, Guide Spring **[5]** and Guide Sleeve (A) **[6]** in order by following the procedure shown in Fig. 1-1 to 1-4.

Then slowly raise the other side of the retaining ring with the small flat-blade screwdriver until it is free. Avoid quickly raising the retainer ring or it may fly out forcefully.

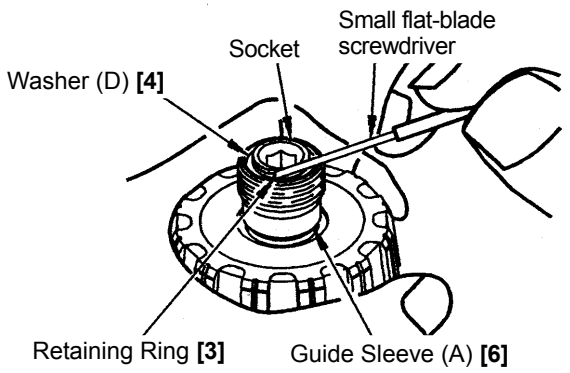


Fig.1-1

Hold the body and adjust the gap of the Retaining Ring **[3]** to the groove of socket, then insert a small flat-blade screwdriver into the groove at an angle.

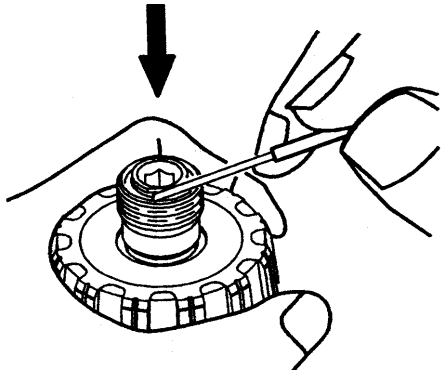


Fig.1-2

Press down Washer (D) **[4]** with the small flat-blade screwdriver.

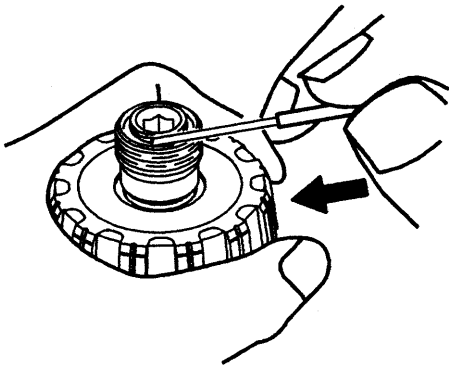


Fig. 1-3

Slide the small flat-blade screwdriver under one side of the gap of the Retaining Ring **[3]**.

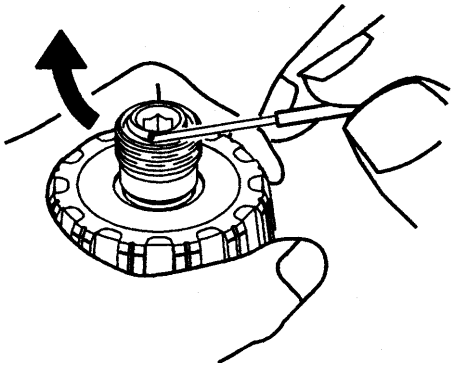


Fig. 1-4

Slowly raise the retaining ring using the end face of Guide Sleeve (A) **[6]** as a fulcrum.

(3) Disassembly of the clutch unit

Remove the Clutch Dial **[7]** after removal of Guide Sleeve (A) **[6]**. Turn the Nut **[8]** counterclockwise and remove it from the Gear Case **[12]**. Remove the Spring **[9]** and Washer (D) **[10]** from the Gear Case **[12]**.

NOTE: Do not remove the Gear Case [12].

5. Disassembly of the power supply unit

The internal wires of the Switch (W/Lock) **[41]** and Terminal **[46]** are soldered to the Printed Circuit Board **[45]**. Unsolder and remove the parts.

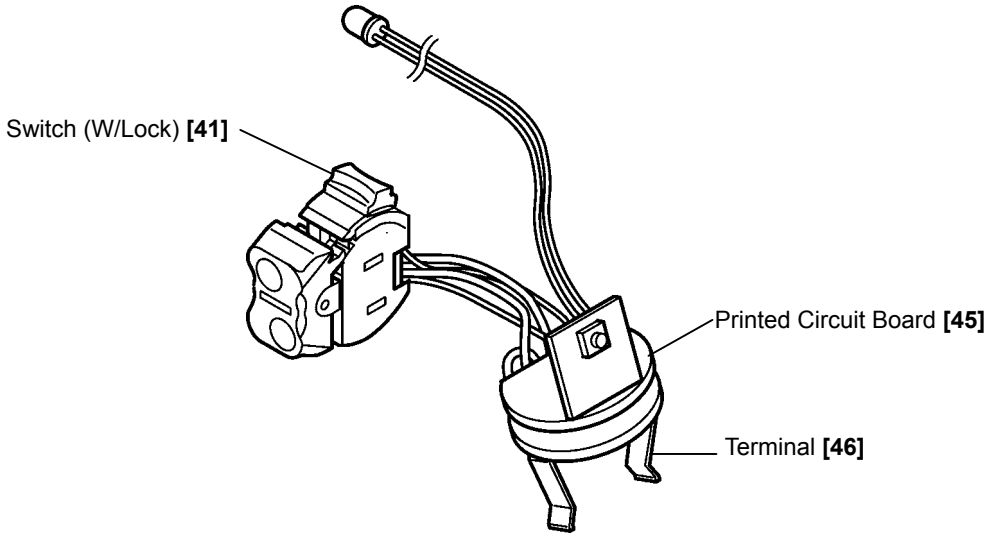
NOTE: Do not remove the Printed Circuit Board [45].

Reassembly

Conduct reassembly by reversing the disassembly procedures. However, special attention should be given to the following items.

1. Reassembly of the power supply unit

• Perform wiring according to the wiring diagram



2. Reassembly of the clutch unit

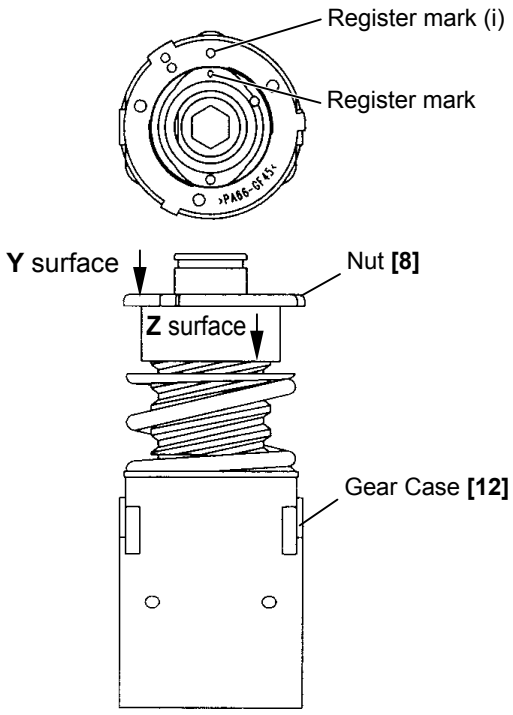
(1) Mount Washer (D) **[10]** and the Spring **[9]** to the Gear Case **[12]**.

(2) Mount the Nut **[8]** to the Gear Case **[12]**.

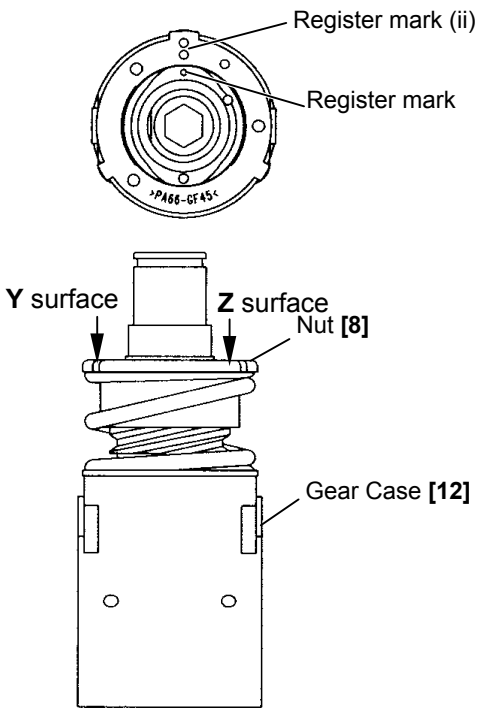
Align register mark (i) on the Nut **[8]** with the register mark on the Gear Case **[12]**. Turn the Nut **[8]** about 1-1/12 turns clockwise so that register mark (ii) on the Nut **[8]** is aligned with the register mark on the Gear Case **[12]**. Check that the Y surface of the Nut **[8]** is aligned with the Z surface of the Gear Case **[12]**.

• Mount the Nut to the Gear Case

Mounting start position



Mounting end position



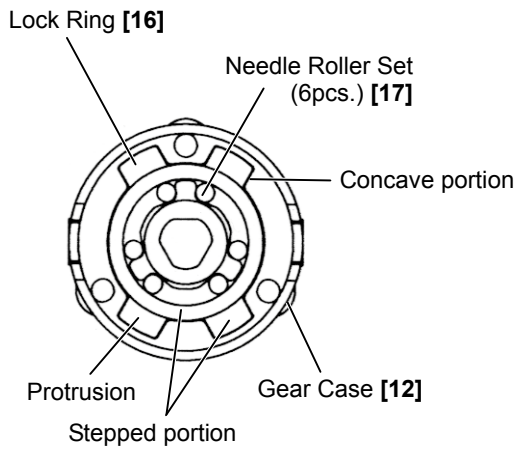
3. Reassembly of the manual tightening mechanism

(1) Mount the Lock Ring **[16]** to the Gear Case **[12]** so that the protrusion of the Lock Ring **[16]** is aligned with the concave portion of the Gear Case **[12]**. At this time, mount the Lock Ring **[16]** so that the stepped protrusion faces forward.

(2) Mount the Needle Roller Set (6 pcs.) **[17]**.

NOTE: Do not apply grease to the Lock Ring [16] and Needle Roller Set (6 pcs.) [17].

• Mount the Lock Ring and the Needle Roller Set



4. Reassembly of the deceleration mechanism

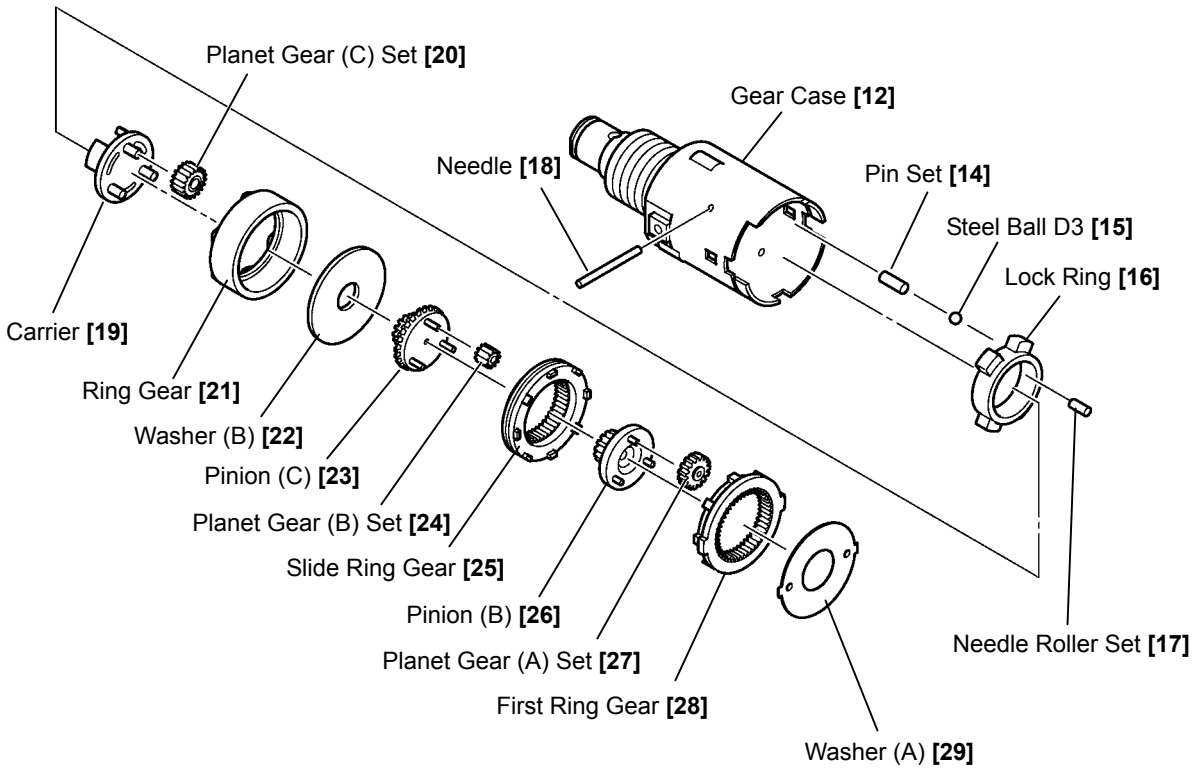
(1) Apply a sufficient amount of grease (Hitachi Motor Grease No. 29) to the engaging portions of each gear and the needle roller unit, and the contacting surfaces of the steel balls of the ring gear.

(2) Mount the parts from the Pin Set (3 pcs.) **[14]** to Washer (A) **[29]** to the parts assembled in the following (b) in order.

(a) Mount the Pin Set (3 pcs.) **[14]** and Steel Ball D3 **[15]**.

(b) Pay attention to the mounting direction of the Ring Gear **[21]**, Carrier **[19]**, Pinion (C) **[23]** and Pinion (B) **[26]**.

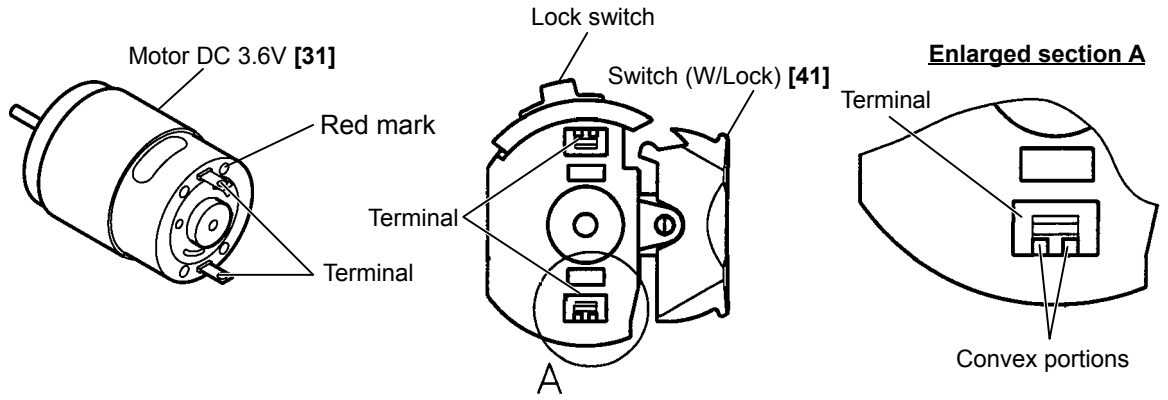
• Mount the parts



5. Reassembly of the drive unit

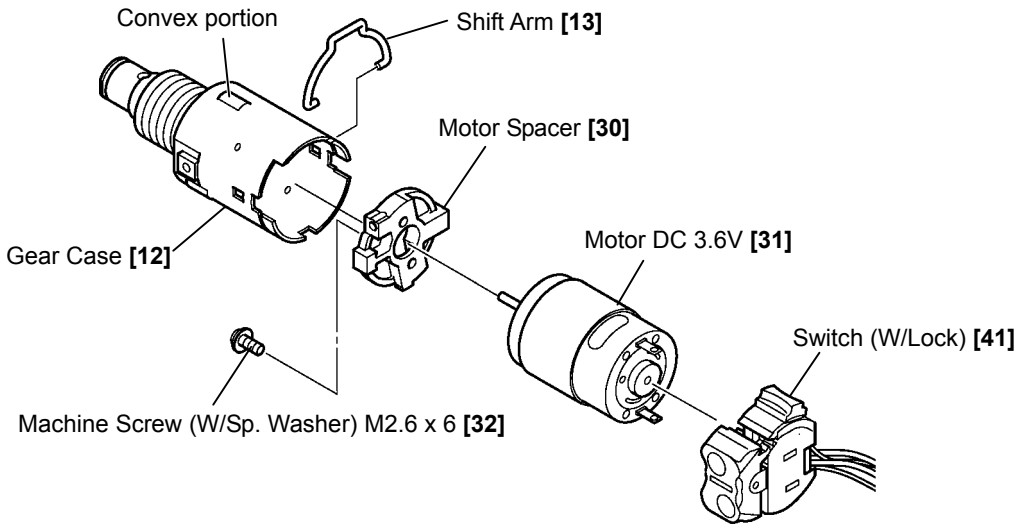
(1) Pay attention to the mounting direction of the Motor DC 3.6V **[31]** and Switch (W/Lock) **[41]**. Insert the red marked terminal of the Motor DC 3.6V **[31]** into the terminal on the lock switch side of the Switch (W/Lock) **[41]**. At this time, insert each terminal of the Motor DC 3.6V **[31]** between the terminal and the convex portion of the Switch (W/Lock) **[41]**.

• Insert the red marked terminal of the motor



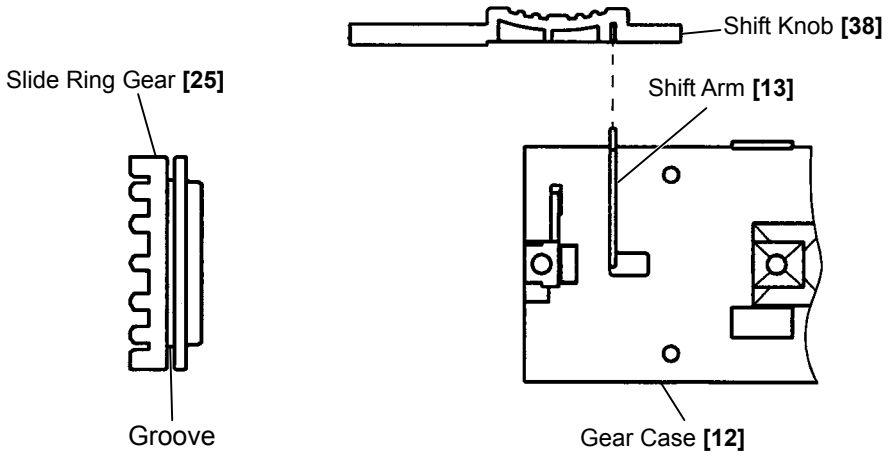
(2) Mount the Motor Spacer **[30]** to the Motor DC 3.6V **[31]** with the two Machine Screw (W/Sp. Washer) M2.6 x 6 **[32]**. Do not mistake the head and tail of the Motor Spacer **[30]**. Note that there is no difference in circumferential direction. Pay attention to the mounting direction when mounting the Motor DC 3.6V **[31]** to the Gear Box Ass'y **[1]**.

• Mount the motor spacer



(3) Mount the Shift Arm **[13]** to the Shift Knob **[38]** by using a small flat-blade screwdriver to completely push the Shift Arm **[13]** into the groove of the Shift Knob **[38]**. Insert the end of the Shift Arm **[13]** into the hole of the Gear Case **[12]** and fit it in the groove of the Slide Ring Gear **[25]**. Pay attention to the direction of the Gear Case **[12]**. Do not mount the Shift Arm **[13]** facing downward.

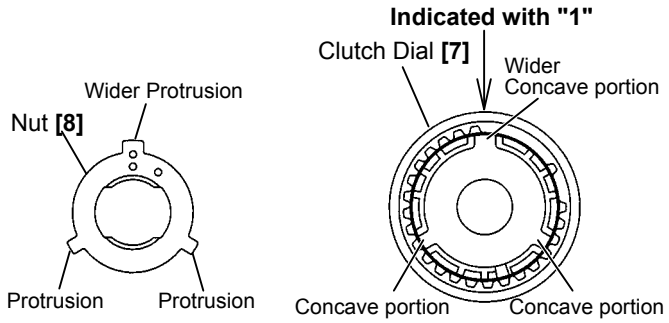
• Mount the Shift Arm



6. Mounting the Clutch Dial to the Gear Case

The Nut **[8]** has three protrusions. One of these protrusions is wider than the others. The Clutch Dial **[7]** has three concave portions. One of these concave portions is wider than the others. Mount the Nut **[8]** to the Clutch Dial **[7]** by aligning the wider protrusion of the Nut **[8]** with the wider concave portion of the Clutch Dial **[7]**. (The wider concave portion in the Clutch Dial **[7]** is at the position indicated with "1" on the outside of the Clutch Dial **[7]**.)

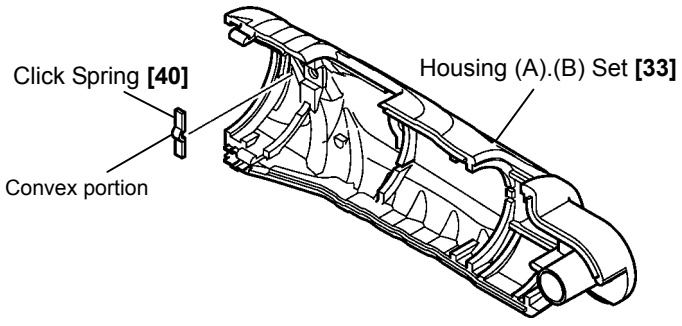
• Mounting the clutch dial



7. Reassembly of the housing unit

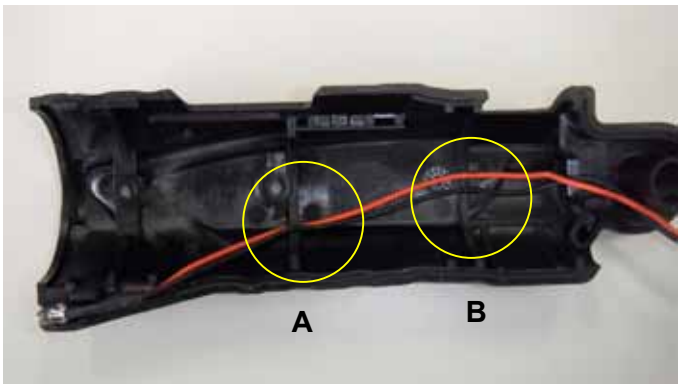
(1) Mount the Click Spring **[40]** to Housing (A).(B) Set **[33]** so that the convex portion of the Click Spring **[40]** can be seen. Apply grease (Hitachi Motor Grease No. 29) to the Click Spring **[40]**.

• Mount the click spring



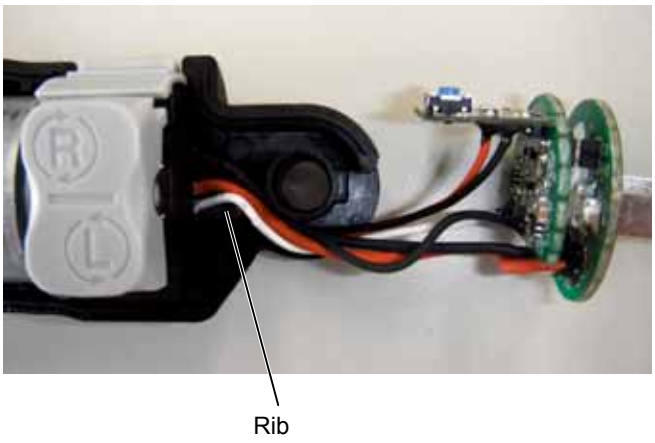
(2) Mount the LED to Housing (A).(B) Set **[33]**. Put the internal wires of the LED between the ribs of Housing (A).(B) Set **[33]**.

• Mount the LED



(3) Mount the drive unit to Housing (A).(B) Set **[33]**. Put the internal wires of the LED and Switch (W/Lock) **[41]** through the rib of the housing.

• Mount the drive unit and put the internal wires



(4) Close Housing (A).(B) Set **[33]** and mount the Handle Cover **[39]**. Tighten the four Pan Hd. Tapping Screw D3 x 8 **[34]**.

(5) Mount the two Click Plate **[37]** to Housing (A).(B) Set **[33]** and apply grease (Hitachi Motor Grease No. 29).

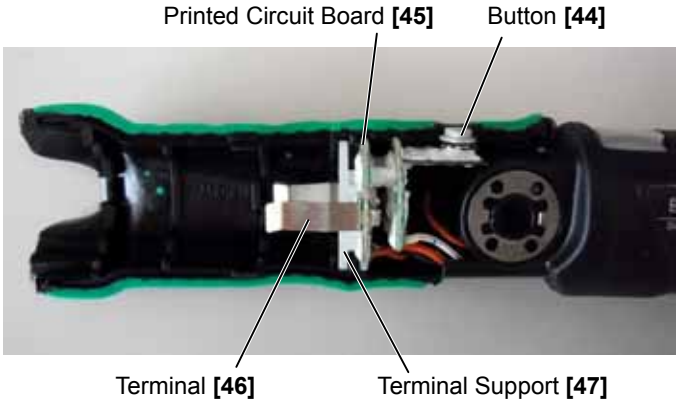
(6) Check for proper operation of the Clutch Dial **[7]**.

When the reassembly procedure is completed up to step (5), ensure that every indication on the Clutch Dial **[7]** from number "1" to the drill mark " ◀▮▮▮ " can be aligned with the triangle mark on Housing (A).(B) Set **[33]**, respectively, and that the Clutch Dial **[7]** turns moderately. If any indication on the Clutch Dial **[7]** cannot be aligned with the triangle mark on Housing (A).(B) Set **[33]**, correctly remount the improperly mounted Clutch Dial **[7]** according to step “2. Reassembly of the clutch unit (2).”

8. Reassembly of the handle unit

Mount either of Handle (A).(B) Set **[50]** to Housing (A).(B) Set **[33]**. Fit the Printed Circuit Board **[45]**, Terminal **[46]** and Terminal Support **[47]** in the grooves of the handle. Mount the Button **[44]** to the switch of the Printed Circuit Board **[45]** and close Handle (A).(B) Set **[50]**. Tighten the Tapping Screw (W/Flange) D4 x 20 (Black) **[43]**. Mount the two Clip **[49]** to the groove of Handle (A).(B) Set **[50]** by using a flat-blade screwdriver.

• Mount either of handle (A).(B) set

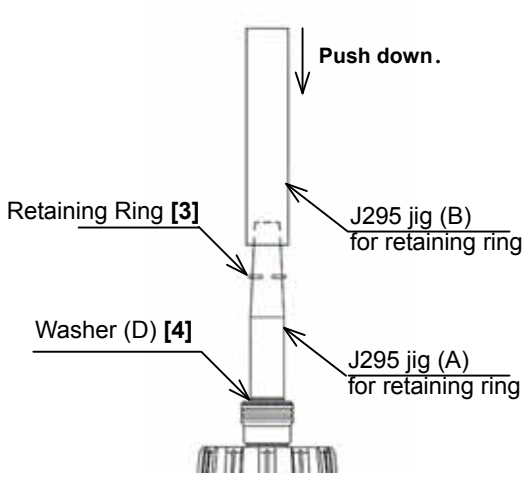


9. Mounting Guide Sleeve (A)

Put the Steel Ball D3.5 **[11]** in the hole of the socket. Mount Guide Sleeve (A) **[6]**, the Guide Spring **[5]**, and Washer (D) **[4]** in sequence. Fit the Retaining Ring **[3]** in the groove of the socket by using J295 jigs (A) and (B) for retaining ring as illustrated.

NOTE: Be sure to replace the Retaining Ring [3] with a new one because the Retaining Ring [3] may be deformed when removed. Guide Sleeve (A) [6] may come off if the deformed Retaining Ring [3] is used again.

• Fit the retaining ring in the groove of the socket



10. Other precautions on reassembly

After completing reassembly, set the storage battery and check for operation.

(1) Check the rotating direction of Guide Sleeve (A) **[6]**.
Press the (R) side of the Switch (W/Lock) **[41]** to check that Guide Sleeve (A) **[6]** rotates clockwise as viewed from behind.

(2) Check for proper operation of the Shift Knob **[38]**.
Check that the speed properly changes between high and low by shifting the Shift Knob **[38]**. If the speed does not change properly or moderately, correctly remount the improperly mounted Shift Knob **[38]** according to step "5. Reassembly of the drive unit (3)."

(3) Check that the LED goes on and off by pushing the Button **[44]**. (Although the LED cannot react when turned on/off too quickly, this is no failure.)

(4) Check for flexible change of the handle between the L-shape and straight shape.

Screw Tightening Torque

- Machine Screw (W/Sp. Washer) M2.6 x 6 **[32]**---------- 0.1 to 0.29 N·m {1 to 3 kgf·cm}
- Pan Hd. Tapping Screw D3 x 8 **[34]** ---------- 0.49 to 0.64 N·m {5 to 6.5 kgf·cm}
- Tapping Screw (W/Flange) D4 x 20 (Black) **[43]**---------- 1.5 to 2.5 N·m {15 to 25 kgf·cm}

2. Precautions on Disassembly and Reassembly of the Battery Charger

Please refer to the Technical Data and Service Manual for precautions on disassembly and reassembly of the Battery Charger Model UC 3SFL.

STANDARD REPAIR TIME (UNIT) SCHEDULES

MODEL	Variable / Fixed	10	20	30	40	50	60 min.
DB 3DL2	General assembly	Work Flow Housing (A).(B) Set Click Plate Guide Sleeve Set	Motor Shift Knob Switch Gear Box Ass'y Clutch Dial Nut Spring Gear Case Shift Arm Lock Ring Carrier Planet Gear (C) Set Ring Gear Pinion (C) Planet Gear (B) Set Slide Ring Gear Pinion (B) Planet Gear (A) Set First Ring Gear	Housing (A).(B) Set			

Hitachi Power Tools

LIST NO. H870

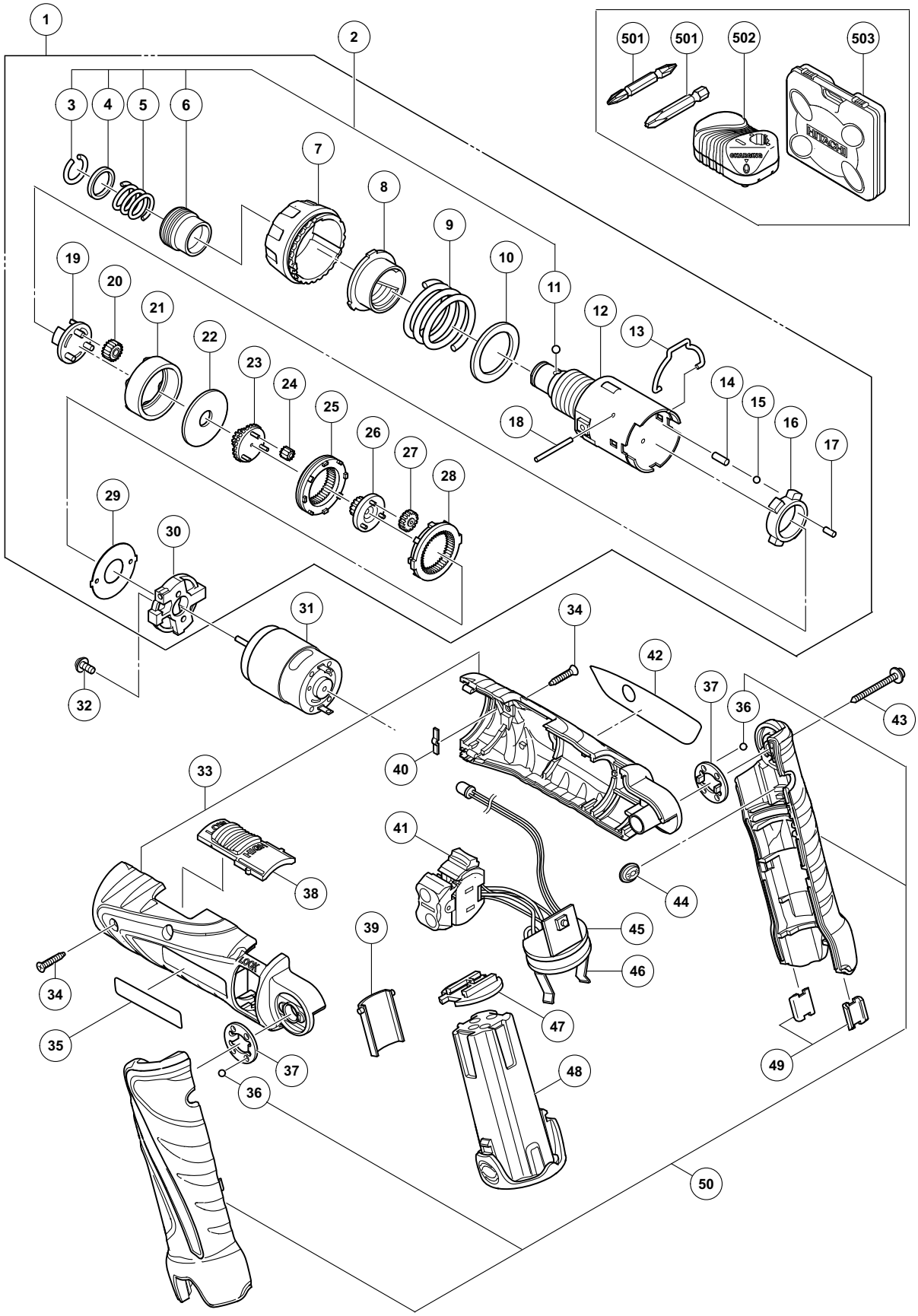
ELECTRIC TOOL PARTS LIST

■ CORDLESS DRIVER DRILL

2010·6·14

Model DB 3DL2

(E1)



	ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
*	1	332-759	GEAR BOX ASS'Y	1	INCLUD. 3-30	
*	1	332-758	GEAR BOX ASS'Y	1	INCLUD. 3-30 FOR CHN, SIN, VIE	
	2	320-085	GUIDE SLEEVE SET	1	INCLUD. 3-6, 11	
	3	315-984	RETAINING RING	1		
	4	315-983	WASHER (D)	1		
	5	320-409	GUIDE SPRING	1		
	6	319-921	GUIDE SLEEVE (A)	1		
	7	332-762	CLUTCH DIAL	1		
	8	326-341	NUT	1		
	9	326-340	SPRING	1		
	10	326-339	WASHER (D)	1		
	11	319-535	STEEL BALL D3.5 (10 PCS.)	1		
*	12	332-761	GEAR CASE	1		
*	12	332-760	GEAR CASE	1	FOR CHN, SIN, VIE	
	13	326-345	SHIFT ARM	1		
	14	326-338	PIN SET (3 PCS.)	3		
	15	317-788	STEEL BALL D3	3		
	16	326-323	LOCK RING	1		
	17	326-324	NEEDLE ROLLER SET (6PCS.)	6		
	18	326-329	NEEDLE	2		
	19	326-325	CARRIER	1		
	20	326-327	PLANET GEAR (C) SET (3 PCS.)	3		
	21	326-326	RING GEAR	1		
	22	326-328	WASHER (B)	2		
	23	332-768	PINION (C)	1		
	24	332-766	PLANET GEAR (B) SET (3 PCS.)	3		
	25	332-767	SLIDE RING GEAR	1		
	26	332-765	PINION (B)	1		
	27	326-335	PLANET GEAR (A) SET (3 PCS.)	3		
	28	326-334	FIRST RING GEAR	1		
	29	332-764	WASHER (A)	1		
	30	332-763	MOTOR SPACER	1		
	31	332-755	MOTOR DC 3.6V	1		
	32	330-755	MACHINE SCREW (W/SP. WASHER) M2.6 X 6	2		
	33	332-754	HOUSING (A). (B) SET	1		
	34	984-319	PAN HD. TAPPING SCREW D3 X 8	4		
	35		HITACHI LABEL	1		
	36	317-788	STEEL BALL D3	4		
	37	326-315	CLICK PLATE	2		
	38	332-757	SHIFT KNOB	1		
	39	332-975	HANDLE COVER	1		
	40	326-309	CLICK SPRING	1		
	41	332-769	SWITCH (W/LOCK)	1		
	42		NAME PLATE	1		
	43	302-086	TAPPING SCREW (W/FLANGE) D4 X 20 (BLACK)	1		
	44	332-756	BUTTON	1		
	45	332-770	PRINTED CIRCUIT BOARD	1		
	46	332-771	TERMINAL	2		
	47	326-316	TERMINAL SUPPORT	1		
*	48	326-299	BATTERY EBM 315 (EUROPE, AUS, NZL)	2		

	ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
*	48	326-263	BATTERY EBM 315 (USA, CAN)	2		
*	48	330-757	BATTERY EBM 315 (CHN)	2		
	49	326-318	CLIP	1		
*	50	332-752	HANDLE (A). (B) SET (GREEN)	1		
*	50	332-588	HANDLE (A) (B) SET (BLACK)	1		

STANDARD ACCESSORIES

	ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
*	501	992-671	+ DRIVER BIT (B) NO. 2 50L	1		
*	501	983-006	+ DRIVER BIT NO. 2 65L	1	FOR CHN, SIN, VIE	
	502		CHARGER (MODEL UC 3SFL)	1		
	503	332-844	CASE	1		

OPTIONAL ACCESSORIES

ITEM NO.	CODE NO.	DESCRIPTION	NO. USED	REMARKS	
601	326-665	HOLSTER	1		
602	992-670	+ DRIVER BIT (B) NO. 1 50L	1		
603	992-672	+ DRIVER BIT (B) NO. 3 50L	1		
604	992-675	- DRIVER BIT (B) 4MM X 50	1		
605	992-676	- DRIVER BIT (B) 5MM X 50	1		
606	992-677	- DRIVER BIT (B) 6MM X 50	1		
607	321-823	DRILL CHUCK AND ADAPTER SET	1	INCLUD. 608, 609	
608	307-543	CHUCK ADAPTER	1		
609	987-575	CHUCK WRENCH FOR 10VLB-D, 10VLR-D	1		